REMARKS

Claims 12-30 are pending in this application. Claims 12 and 18 have been amended. New claims 26-30 have been added to round out the scope of protection afforded by the present invention. No new matter has been introduced.

Claims 12 and 18-25 stand rejected under 35 U.S.C. §102(e) as being anticipated by Sandhu et al. (U.S. Patent No. 6,086,442) ("Sandhu"). This rejection is respectfully traversed.

The claimed invention relates to a field emission display device. As such, amended independent claim 12 recites a "field emission display device" comprising *inter alia* "at least one current emitter formed of a doped silicon" and "a substrate having a phosphor coating in at least one region positioned to receive electrons emitted by said current emitter." Amended independent claim 12 also recites that the current emitter comprises "a treated current emission surface having a reduced atomic concentration of oxygen resulting from treatment of the current emission surface with a plasma enhanced chemical vapor deposition hydrogenation process in the presence of a silane gas followed by a nitrogen infusion process." Amended independent claim 12 further recites that the current emitter comprises sides, "at least a portion of said sides being surrounded by an insulating layer to prevent current from radiating out of the sides."

Independent claim 24 recites a "field emission display device comprising" *inter alia* "at least one current emitter formed of a doped silicon" and "a substrate having a phosphor coating on at least a portion of the substrate, said coating positioned to receive electrons emitted by the current emitter." Independent claim 24 also recites that the current emitter comprises "a plasma enhanced chemical vapor deposition hydrogenation process-treated and subsequently nitrogen infusion process-treated current emission surface having a reduced concentration of native oxides."

Sandhu relates to methods of forming field emission devices. According to Sandhu, "a method of forming a field emission device includes forming an electron

emission substrate comprising emitters and an electrically conductive extraction grid formed outwardly of the emitters." (Abstract). Sandhu also teaches that "[a]n electrically conductive layer is substantially selectively deposited over the grid and emitters relative to the insulative mass" and that "[a]fter the depositing, the electron emission substrate is joined with an electron collector substrate." (Abstract).

Sandhu fails to disclose all limitations of independent claims 12 and 24. Sandhu fails to teach or suggest "a treated current emission surface having a reduced atomic concentration of oxygen resulting from treatment of the current emission surface with a plasma enhanced chemical vapor deposition *hydrogenation* process *in the presence of a silence gas* followed by a nitrogen infusion process," as amended independent claim 12 recites (emphasis added). Sandhu also fails to teach or suggest a current emitter comprising "a plasma enhanced chemical vapor deposition *hydrogenation* process-treated and subsequently nitrogen infusion process-treated current emission surface having a reduced concentration of native oxides," as independent claim 24 recites (emphasis added).

Applicant is surprised at the failure of the Office Action to acknowledge that Sandhu does not employ a plasma enhanced chemical vapor deposition *hydrogenation* process for the formation of a current emitter. Sandhu simply does not teach a hydrogenation process. Sandhu teaches that plasma enhanced chemical vapor deposition is employed for the actual formation of an electrically conductive layer 56, and not for the treatment of a current emission surface after its formation, as in the claimed invention. In fact, the plasma enhanced chemical vapor deposition *hydrogenation* process of the claimed invention employs a silane gas and not "a plasma from source gases comprising a metal tetrahalide (i.e., $TiCl_4$) and H_2," as in Sandhu. In addition, when mentioning that "[a]nother example preferred method of substantially selectively depositing layer 56 (where such comprises a metal silicide) constitutes LPCVD at a temperature of at least 650°C. comprising metal tetrahalide and silicon comprising source gases," Sandhu mentions indeed that"[p]referred silicon source gases include both organic and inorganic silicon source gases" and that "[e]xample inorganic source gases include silane, disilane, etc."

(Col. 3, lines 26-33). Sandhu, however, clearly teaches that "[i]n this particular described process, the substantially selective deposition is preferably *not plasma enhanced*, which facilitates or enhances the selectivity to the extraction grid and emitters to the exclusion of the insulative mass." (Col. 3, lines 35-39; emphasis added). Thus, in addition of not teaching plasma enhanced chemical vapor deposition hydrogenation for the formation of a current emitter, Sandhu teaches against the use of a plasma enhanced process even for the formation of a conductive layer.

Sandhu also fails to teach or suggest that the current emitter comprises sides, "at least a portion of said sides being surrounded by an insulating layer to prevent current from radiating out of the sides," as amended independent claim 12 recites. In Sandhu, emitter 48, which would arguably correspond to the current emitter of the claimed invention, is "provided in electrical connection with layer 46" which is formed of "semiconductive material 46 (or other conductive material)" (col. 2, lines 14-21), and not "comprising sides, at least a portion of said sides being surrounded by an insulating layer to prevent current from radiating out of the sides," as in the claimed invention.

Applicant further notes that the assertion of the Office Action that "Sandhu et al. discloses . . . an emitter 48 . . . having a current emitter surface (layer 56) that has been treated with a plasma enhanced CVD hydrogenation process . . . followed by a nitrogen infusion process . . . thus inherently resulting reduced atomic concentration" is an unsupported assertion. "When the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such a teaching or suggestion appears in the reference . . . . The mere fact that a certain thing may result from a given set of circumstances is not sufficient [to establish inherency] . . . . 'That which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown.'" In re Rijckaert, 9 F.3d 1531, 1534 (Fed. Cir. 1993) (emphasis added). The Office Action fails to support its assumption with a reference to cited prior art. Moreover, the Office Action has not alleged or shown that the assumed process is instructional to those skilled in the art. In short, the Office Action has not established that the assumed process is inherent.

For at least these reasons, Sandhu fails to teach or suggest all limitations of independent claims 12 and 24, and withdrawal of the rejection of these claims is respectfully requested.

Claims 13-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sandhu in view of Kanicki. This rejection is respectfully traversed.

Applicant reaffirms that the asserted combination of references is improper under the provisions of 35 U.S.C. § 103(c). Since the subject matter disclosed in Sandhu (which qualifies as prior art only under § 102(e)) and the subject matter of the claimed invention were commonly owned at the time the invention was made, the Sandhu reference is not to be considered in a determination of patentability under § 103. Accordingly, withdrawal of the rejection of claims 13-17 is also respectfully requested.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

By _____

Thomas J. D'Amico
Registration No.: 28,371
Gabriela I. Coman
Registration No.: 50,515
DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP
2101 L Street NW
Washington, DC 20037-1526
(202) 785-9700
Attorneys for Applicant